

**Amendment and Response**

Applicant: David C. Collins et al.

Serial No.: 10/821,135

Filed: April 8, 2004

Docket No.: 200400517-1/H301.381.101

Title: GENERATING AND DISPLAYING SPATIALLY OFFSET SUB-FRAMES

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**REMARKS**

The following remarks are made in response to the Office Action mailed Jan. 26, 2007. Claims 1-15, 20-33 were rejected. Claims 16-19 have been objected to. With this Response, claims 8, 12, 20, 21, 24-28, 30, 32, and 33 have been amended. Claim 22 has been canceled without prejudice as to the subject matter contained therein. Claims 1-21 and 23-33 remain pending in the application and are presented for reconsideration and allowance.

**Double Patenting**

Claim 1 is provisionally rejected under 35 U.S.C. §101 as claiming the same invention as that of claims 1 and 2 of U.S. Patent Application No. 2005/0225570.

Claim 1 is rejected under 35 U.S.C. §101 as claiming the same invention as that of claim 1 of U.S. Patent No. 7,109,981.

Claim 1 recites “generating first and second sub-frames, wherein the first and the second sub-frames comprise a second set of pixels, wherein each of the second set of pixels is centered relative to one of the first set of pixels” (emphasis added). Neither claim 1 nor claim 2 of U.S. Patent Application No. 2005/0225570 recite this feature. In addition, claim 1 of U.S. Patent No. 7,109,981 does not recite this feature. Accordingly, claim 1 of the present application does not claim the same invention of claims 1 or 2 of U.S. Patent Application No. 2005/0225570 or claim 1 of U.S. Patent No. 7,109,981. See MPEP §804(II)(A). Applicants respectfully request the withdrawal of the rejections under 35 U.S.C. §101 for at least this reason.

In addition, the invention of claim 1 may provide advantages above those taught or suggested by claims 1 and 2 of U.S. Patent Application No. 2005/0225570 and claim 1 of U.S. Patent No. 7,109,981. As noted in the specification, the invention may provide fast convergence and low memory requirements in the generation of sub-frames. The invention may also represent more closely the relative proportions that sub-frame pixels make toward the displayed representation of a pixel.

**Specification**

Applicants have amended the specification to overcome the objections in the Office Action. No new matter has been entered, and the specification change on page 36 is being

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made to bring the specification into conformity with the drawings. Applicants respectfully request the withdrawal of the objections to the Specification.

**Claim Rejections under 35 U.S.C. § 112**

Claims 8, 12 and 22 are rejected under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Applicants have amended claims 8-12 to overcome this rejection and respectfully request the withdrawal of the rejection of claims 8, 12 and 22 under 35 U.S.C. §112, second paragraph.

Claims 21 and 24 are rejected under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Applicants have amended claims 21 and 24 to overcome this rejection and respectfully request the withdrawal of the rejection of claims 21 and 24 under 35 U.S.C. §112, second paragraph.

Claim 25 is rejected under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Applicants have amended claim 25 to overcome this rejection and respectfully request the withdrawal of the rejection of claim 25 under 35 U.S.C. §112, second paragraph.

Claim 30 is rejected under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Applicants have amended claim 30 to overcome this rejection and respectfully request the withdrawal of the rejection of claim 30 under 35 U.S.C. §112, second paragraph.

**Claim Rejections under 35 U.S.C. § 101**

Claims 20-25 and 26-33 are rejected under 35 U.S.C. §101 because the claimed invention is directed to non-statutory subject matter.

Claim 20, as amended, recites “means for generating the first, the second, the third, and the fourth sub-frames using the image data, each of the first, second, third, and fourth sub-frames comprising a plurality of sub-frame pixel values that correspond to a plurality of sub-frame pixels that are centered with respect to a plurality of pixels of the image data” and

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“means for updating the first, the second, the second, the third, and the fourth sub-frames in accordance with a difference between the simulated image and the image data.” Applicants respectfully submit that both the generation and the updating of sub-frames recited in claim 20 provide tangible and concrete results. Accordingly, claims 20-25 recite statutory subject matter and Applicants respectfully request the withdrawal of the rejection of claims 20-25 under 35 U.S.C. §101 for at least these reasons.

Claim 26, as amended, recites “generating first, second, third, and fourth sub-frames based on the first image such that each pixel in each of the first, the second, the third, and the fourth sub-frames is centered with respect to a corresponding pixel in the first image ... and updating the first, the second, the third, and the fourth sub-frames in accordance with a difference between the simulated image and the first image.” Applicants respectfully submit that both the generation and the updating of sub-frames recited in claim 26 provide tangible and concrete results. Accordingly, claims 26-33 recite statutory subject matter and Applicants respectfully request the withdrawal of the rejection of claims 26-33 under 35 U.S.C. §101 for at least these reasons.

**Claim Rejections under 35 U.S.C. § 102**

Claims 1, 2 and 13 are rejected under 35 U.S.C. §102(b) as being anticipated by U.S. Pub. 2003/0020809 (Gibbon).

Claim 1 recites, *inter alia*:

receiving image data for the image, the image data comprising a first set of pixels;  
generating first and second sub-frames, wherein the first and the second sub-frames comprise a second set of pixels, wherein each of the second set of pixels is centered relative to one of the first set of pixels;

The Office Action fails to identify a teaching in Gibbon of “wherein each of the second set of pixels is centered relative to one of the first set of pixels” as recited in claim 1.

In the portion of Gibbon cited in the Office Action, Gibbon teaches that “sub-frames are offset by a (sic) some portion of a pixel” and “[p]osition 34 is an offset of position 33 by, for example, slightly less than one pixel horizontally 35 and vertically 36.” Gibbon, paragraph [0034]. These teachings, however, do not describe how the sub-frames of Gibbon

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relate to the image data from which the sub-frames are created. Accordingly, these teachings do not teach or suggest “wherein each of the second set of pixels is centered relative to one of the first set of pixels” as recited in claim 1.

Applicants respectfully note that the present application discloses several alternative ways to generate sub-frame pixel data to more closely represent the relative proportions that sub-frame pixels make toward the displayed representation of a pixel. Gibbon does not appear to teach or suggest ways of generating sub-frame pixel data to more closely resemble the displayed representation of a pixel. Accordingly, Applicants respectfully submit that the recitation of “wherein each of the second set of pixels is centered relative to one of the first set of pixels” in claim 1 patentably distinguishes over Gibbon.

Applicants respectfully request the withdrawal of the rejection of claim 1 and claim 2 which depends from claim 1 under 35 U.S.C. §102(b) for at least this reason.

Applicants respectfully request the withdrawal of the rejection of claim 13 for at least the reasons given above for claim 1.

In addition, claim 13 recites

an image processing unit configured to define first, second, third, and fourth sub-frames comprising a second set of pixels, wherein each of the second set of pixels is centered on one of the first set of pixels; and

a display device adapted to alternately display the first sub-frame in a first position, the second sub-frame in a second position spatially offset from the first position, the third sub-frame in a third position spatially offset from the first position and the second position, and the fourth sub-frame in a fourth position spatially offset from the first position, the second position, and the third position.

The Office Action has failed to identify a teaching or suggestion of “an image processing unit configured to define ... third, and fourth sub-frames” or “a display device adapted to alternately display ... the third sub-frame in a third position spatially offset from the first position and the second position, and the fourth sub-frame in a fourth position spatially offset from the first position, the second position, and the third position” as recited in claim 13.

Applicants respectfully request the withdrawal of the rejection of claim 13 for at least this additional reason.

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**Claim Rejections under 35 U.S.C. § 103**

Claims 3-6, 20, 26 and 27-28 are rejected under 35 U.S.C. §103(a) as being unpatentable over Gibbon in view of U.S. Patent No. 6,650,704 (Carlson).

Claims 7-12, 14-15, 21-22, 24-25 and 29-33 are rejected under 35 U.S.C. §103(a) as being unpatentable over Gibbon in view of Carlson and further in view of U.S. Pub. 2003/0063190 (Young).

Claims 3-12 depend from claim 1. Neither Carlson nor Young teach or suggest the features of claim 1 identified above that are not taught or suggested by Gibbon. Accordingly, Applicants respectfully request the withdrawal of the rejection of claims 3-12 under 35 U.S.C. §103(a) for at least this reason.

In addition for claims 4-6, 10, and 11, the Office Action states with respect to features of claims 4-6 that "those would have been apparent to one skilled in the art". Office Action, p. 8. The Office Action refers to claim 4 to support a rejection of claims 10 and 11. Office Action, p. 11. In order to reject claims 4-6, 10, and 11 under 35 U.S.C. §103(a), the Examiner must identify a teaching or suggestion of each of the features of claims 4-6, 10, and 11 in the cited references. Applicants respectfully submit that the cited reference do not teach or suggest the features of claims 4-6, 10, and 11 and respectfully request the withdrawal of the rejection of claims 4-6, 10, and 11 under 35 U.S.C. §103(a) for at least this additional reason.

Claims 14-15 depend from claim 13. Neither Carlson nor Young teach or suggest the features of claim 13 identified above that are not taught or suggested by Gibbon. Accordingly, Applicants respectfully request the withdrawal of the rejection of claims 14-15 under 35 U.S.C. §103(a) for at least this reason.

In addition for claim 14, the Office Action has failed to cite of teaching or suggestion in Gibbon of "wherein the first set of pixels comprise a plurality of pixels at a first resolution, and wherein the second set of pixels comprise a plurality of pixels at a second resolution less than the first resolution" as recited in claim 14. Applicants respectfully note that the Office Actions's assertion that "Gibbon's method has the inherent characteristic that it can be used with two sub-images that don't have the same resolution. (sic) So long as alignment is proper the two sub-images will combine to produce a final image having a greater resolution than

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any single image (See paragraph [0012])” is not supported by a teaching or suggestion in Gibbon and does not identify a teaching or suggestion of the above features of claim 14. Applicants respectfully request the withdrawal of the rejection of claim 14 under 35 U.S.C. §103(a) for at least this additional reason.

Claim 20, as amended, recites “means for generating the first, the second, the third, and the fourth sub-frames using the image data, each of the first, second, third, and fourth sub-frames comprising a plurality of sub-frame pixel values that correspond to a plurality of sub-frame pixels that are centered with respect to a plurality of pixels of the image data ... .” Gibbon does not teach or suggest these features of claim 20 for at least the reasons given above for claim 1. In addition, Carlson does not teach or suggest these features of claim 20. Accordingly, Applicants respectfully request the withdrawal of the rejection of claim 20 and claim 23 which depends from claim 20 under 35 U.S.C. §103(a) for at least this reason.

Claims 21, 22, 24, and 25 also depend from claim 20. Young does not teach or suggest the features of claim 20 identified above that are not taught or suggested by Gibbon or Carlson. Accordingly, Applicants respectfully request the withdrawal of the rejection of claims 21, 22, 24, and 25 under 35 U.S.C. §103(a) for at least this reason.

Claim 26, as amended, recites “generating first, second, third, and fourth sub-frames based on the first image such that each pixel in each of the first, the second, the third, and the fourth sub-frames is centered with respect to a corresponding pixel in the first image ... .” Gibbon does not teach or suggest these features of claim 26 for at least the reasons given above for claim 1. In addition, Carlson does not teach or suggest these features of claim 26. Accordingly, Applicants respectfully request the withdrawal of the rejection of claim 26 and claims 27 and 28 which depends from claim 26 under 35 U.S.C. §103(a) for at least this reason.

Claims 29-33 also depend from claim 26. Young does not teach or suggest the features of claim 26 identified above that are not taught or suggested by Gibbon or Carlson. Accordingly, Applicants respectfully request the withdrawal of the rejection of claims 29-33 under 35 U.S.C. §103(a) for at least this reason.

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**Allowable Subject Matter**

Claims 16-19 are objected to as being dependent upon rejected base claims, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The Applicants wish to express their appreciation to the Examiner for this indication of allowance. However, based on the preceeding argument, Applicants believe the parent claims of claims 16-19 are also allowable and thus Applicants have chosen not to place them in independent form as suggested by the Examiner.

**CONCLUSION**

In view of the above, Applicant respectfully submits that pending claims 1-21 and 23-33 are in form for allowance and are not taught or suggested by the cited references. Therefore, reconsideration and withdrawal of the rejections and allowance of claims 1-21 and 23-33 is respectfully requested.

No fees are required under 37 C.F.R. 1.16(h)(i). However, if such fees are required, the Patent Office is hereby authorized to charge Deposit Account No. 08-2025.

The Examiner is invited to contact the Applicant's representative at the below-listed telephone numbers to facilitate prosecution of this application.

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Any inquiry regarding this Amendment and Response should be directed to either Timothy F. Myers at Telephone No. (541) 715-4197, Facsimile No. (541) 715-8581 or Christopher P. Kosh at Telephone No. (512) 241-2403, Facsimile No. (512) 241-2409. In addition, all correspondence should continue to be directed to the following address:

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Respectfully submitted,


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